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**Risk Assessment Guidance for Superfund  
Volume I: Human Health  
Evaluation Manual  
(Part E, Supplemental Guidance for  
Dermal Risk Assessment)**

**Final**

**Office of Superfund Remediation and Technology Innovation  
U.S. Environmental Protection Agency  
Washington, DC**

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This document provides guidance to EPA Regions concerning how the Agency intends to exercise its discretion in implementing one aspect of the CERCLA remedy selection process. The guidance is designed to implement national policy on these issues.

Some of the statutory provisions described in this document contain legally binding requirements. However, this document does not substitute for those provisions or regulations, nor is it a regulation itself. Thus, it cannot impose legally-binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. Any decisions regarding a particular remedy selection decision will be made based on the statute and regulations, and EPA decisionmakers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. EPA may change this guidance in the future.

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## ABOUT THIS DOCUMENT

**WHAT IT IS** This document is Supplemental Guidance (Part E) to the *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (RAGS)*. This document incorporates and updates the principles of the EPA interim report, *Dermal Exposure Assessment: Principles and Applications* (DEA) (U.S. EPA, 1992a), released by the Office of Health and Environmental Assessment (OHEA), in the Office of Research and Development (ORD), in January 1992. Part E contains methods for conducting dermal risk assessments. EPA has found these methods generally to be appropriate. However, for each dermal risk assessment, Regions must decide whether these methods, or others, are appropriate, depending on the facts. Specific information and data tables and updated or modified assumptions or variables used in this guidance are available on the following EPA WebPages:

<http://www.epa.gov/oswer/riskassessment/>□

or

<http://www.epa.gov/superfund/programs/risk/ragse/index.htm>□

**FOR WHOM** This guidance document is for risk assessors, risk assessment reviewers, remedial project managers (RPMs), and risk managers involved in Superfund site investigations and human health risk assessments.

**WHAT IS NEW** RAGS Part E updates or expands the following elements in dermal risk assessment methodology:

- updated dermal exposure assessment equations for the water pathway
- updated table for screening contaminants of potential concern (COPCs) from contaminants in water
- specific dermal absorption from soil values for ten chemicals and recommended defaults for screening other organic compounds
- updated soil adherence values based on receptor activities
- updated dermal exposure parameters that are consistent with the *Exposure Factors Handbook* (U.S. EPA, 1997a)
- an expanded Uncertainty Analysis section that discusses and compares the contribution of specific components to the overall uncertainty in a dermal risk assessment.

**REVIEW** This guidance document has been reviewed by internal EPA peer review (May 1997), external peer review (January 1998), and followup external peer review (January 2000). In addition, specific technical recommendations were provided by a Peer Consultation Workshop organized by the Risk Assessment Forum (December 1998). EPA received public comments on the draft of the guidance that was released in December 2001.